Mormons and the Environment in America

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ABSTRACT

Over the past decade, public opinion research increasingly includes questions about environmental issues. Most social science research examining variations among religious groups' environmental views focuses on large, easily sampled groups. Research examining views of specific small American populations, such as members of The Church of Jesus Christ of Latter-Day Saints (informally known as Mormons, or the abbreviation of Latter-Day Saints, "LDS"), is limited. This master's project examines American Mormon opinions about the environment generally, as well as LDS views about contemporary environmental issues and public policy proposals related to the environment. Research methods consisted of collecting public opinion polling data through online surveys directed at a general American audience and targeted LDS participants. Using statistical analysis, I measured differences between the views of the two groups.

The study reveals significant differences between the Mormon and general American samples, but I do not conclude that variation in religious preference is the only cause of the differences. Due to variables introduced through the online collection methods (including age, education level, political ideology, and perhaps income levels), the observed differences are likely more dramatic than would be observed if LDS views were compared to a more representative sample of Americans. I found that the LDS sample is less concerned about environment issues generally than the non-Mormon sample and more likely to think claims about the environment are exaggerated. Mormons sampled are relatively less confident in the scientific evidence of climate change, but are supportive of stricter emission controls on power plants, a major source of global warming-related gases. Compared to the general American group, Mormons express lower levels of support for increased national spending to protect the environment and less willingness to fund environmental protection through higher taxes or higher prices on consumer products. With respect to energy, Mormons are significantly more supportive of the use of fracking in natural gas exploration and construction of the cross-border Keystone XL oil pipeline than the non-LDS survey group. While LDS respondents are typically supportive of solar power, their expressions of support are not as robust as was seen from the other group.

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INTRODUCTION

Foundational environmental literature frequently makes reference to religious texts and practices, and acknowledges the importance of the world's religions in dealing with environmental problems (Hitzhusen 2006). This makes sense, since many longstanding and emerging environmental issues have moral and ethical components. The World Commission on Environment and Development noted in its influential 1987 report, *Our Common Future,* that "the world's religions could help provide direction and motivation in forming new values that would stress individual and joint responsibility towards the environment and towards nurturing harmony between humanity and environment" (1987).

Aldo Leopold, whose book *A Sand County Almanac* is often referred to famously as the bible of the contemporary environmental movement, frequently referenced Biblical passages and he was sometimes described as a prophet (Callicott 2005). In the foreword to his book he noted, "conservation is getting nowhere because it is incompatible with our Abrahamic concept of land" (Leopold 1949).

E.F. Schumacher criticized modern economic progress bent on harnessing selfishness and ever expanding "need", things which "religion and traditional wisdom universally call upon us to resist" (1973). Also within the context of economics and the environment, T.N. Jenkins asked whether "cultural heritages have a role in establishing an environmental ethic for today" (1998). Interestingly, he notes that no society pursuing development and "materialistic individualism" has managed to escape the environmental problems associated with that development, regardless of its environmental traditions.

While organized religion has historically played a central role in issues of ethics, behavior, and morality, specific denominations have differed widely in their individual interactions with conservation and environmental movements. Many Eastern religions are known to express an attitude of balance with nature, whereas Western religions are sometimes criticized as a source of environmental exploitation. One widely cited article by Lynn White, Jr. suggested a link between the "Judeo-Christian" concept of dominion and a potentially negative impact on the environment (White 1967, Sherak et al. 2007). Since it was first published, many other researchers have examined White's theory, with many supporting his thesis and others challenging White's conclusion, showing that Christianity and support for the environment are not incompatible (Djupe and Hunt 2009).

Some American faith leaders have called environmental concerns such as climate change moral issues, noting its disproportionate impacts on poor people (Committee on Energy & Commerce 2013, Djupe and Gwiasda 2010). Religious denominations more recently tied to politically conservative positions on social issues in general have sometimes supported environmental protection, although that has not necessarily been reflected in their members' votes (Pew 2004). The issue is complicated, however, as reports that young Evangelical Protestants hold more liberal views on the environment than older individuals of the same faith suggest (Smith et al. 2010).

General Social Science Research about the Environment

Over the past decade, public opinion research increasingly includes questions about environmental issues. Many Americans cite religion as highly influential in shaping their opinions about social and political issues. Public opinion institutions like the Pew Research

Center have conducted surveys to evaluate what Americans of different religious denominations think about a variety of environmental issues and policy proposals (energy, climate change, etc.).

A Pew Forum on Religion & Public Life report from October 2004 found strong backing for environmental protection generally across religious groups (Pew 2004). Polling conducted in 2008 found that attitudes had mostly remained strong, but concluded that support for environmental regulations among "religious traditionalists" had declined somewhat (The Henry Institute 2008). Interestingly, a 2010 Pew study found that, unlike with other social issues such as abortion and same-sex marriage, fewer Americans identified religion as an influence in their opinions about the environment (Pew 2010b).

Looking beyond simply questions of environmental protection, religious groups' views on specific environmental issues are more variable. A Pew poll from 2009 examined views on global warming and noted significant differences between Americans unaffiliated with a religion when compared to white Evangelical Protestants (Pew 2009b). Seventy-five percent of religiously unaffiliated Americans agreed that there is solid evidence the earth is warming, while only 58% of white Evangelical Protestants agreed. The social and political partisan divide over environmental issues, especially the debate over global warming, is deep (Pew 2008b).

Social Science Research about Mormons and the Environment

Social science research focusing on specific small American population groups and specific issues, like the environment, is limited. Many polls examining religion and the environment provide breakdowns only of large religious groups such as Evangelical Protestants, Mainline

Protestants, and Catholics (Pew 2004). This is largely a result of sample size, which does not allow for statistical analysis of responses from less represented religions (Pew 2009b). For members of The Church of Jesus Christ of Latter-Day Saints (herein referred to as Mormons or by the abbreviation of Latter-Day Saints, "LDS"), the sample-size effect is particularly important because Mormons comprise only about 1.7 percent of the U.S. population (Pew 2008a).

The profile of The Church of Jesus Christ of Latter-Day Saints (the Mormon Church) has increased over the past several years. The Mormon Church was frequently discussed in 2012, following the nomination of Mitt Romney, an active Mormon, as the Republican candidate for president. In 2011, Pew conducted the first independent, nationally representative survey of Mormons in America (Pew 2012). While this report documented a variety of findings about Mormon opinions relating to political and social issues such as immigration, government size, and abortion, it did not address any questions about the environment.

Although there exists a body of published literature discussing Mormonism and the environment, there is little in the way of social science research (Foltz 2000 and Nibley 1978). In 2005, Lori M. Hunter and Michael B. Toney published the results of a study examining the environmental perspectives of a narrowly focused Mormon population in Cache County, Utah (Hunter and Toney 2005). Comparing survey results for Cache County Mormons to the findings from the 1993 General Social Survey for American generally, they reported some conflict in the environmental views Mormons hold. The LDS survey group in the study expressed higher levels of environmental concern, with less focus on short-term economic development than most Americans. Mormons were less willing, however, to personally sacrifice to improve the

environment through higher prices or higher taxes. Although the LDS study group was more likely than Americans generally to think they could positively affect the environment, they were less likely to engage directly in environmental activism. Mormon respondents indicated significantly lower rates of participation with environmental groups, and lower rates of engagement with environmental causes through signing petitions, donating money, or direct protest.

LDS Politics and the Environment

In order to isolate the cause of a belief, one would need to control for other differences. In addition to demographic differences between groups, political persuasion is a perfect example of a difference other than religious preference that could explain differences between two groups of individuals. For example, it is well known that Mormons are more conservative than the nation as a whole. The results of past polling showed that 66% of Mormon respondents identify as "conservative," 22% as "moderate," and only 8% as "liberal" (Pew 2012). It seems very likely that political ideology would explain, or at least correlate with, differences in environmental opinion as much or even more than religious preference. It is beyond the scope of the current research, however, to explain the cause of any differences.

Research Question and Objectives

The central question of this project's research is:

What does the American Mormon community think about the environment?

The objective is to evaluate the American LDS community's opinions about the environment generally and about certain contemporary environmental issues and public policy proposals

related to the environment specifically. Another objective was to evaluate whether the American LDS community cites religion as an influence on their environmental attitudes.

This research seeks to examine how LDS environmental opinions differ from those held by Americans generally, and in some cases how they compare to those held by members of other religious denominations or individuals who report no religious affiliation. Given the important role social issues have played in the American political landscape over the past 40+ years this project also includes an inquiry into political views. Based on indications that the LDS community self-defines as conservative (Pew 2009a) and the perception of the environment as a social issue that occasionally breaks down on party lines, I expected to see strong indications that political ideology is a more obvious indicator of environmental opinions than religious my hypothesis is that political ideology is likely a more obvious indicator of opinion than religious affiliation.

METHODS

I used two parallel methods of public opinion research to collect research data to answer my research questions. To overcome the small sample size problem associated with researching national LDS opinions using general surveys, I employed a targeted, but still random, approach to collect public opinion responses from Mormons. Separately, the same survey questions were administered to a general American audience. The only difference was a modification to the introductory statements and consent language, which were tailored to the two groups based on the outreach method inviting the two groups to participate.

Survey Design

The survey questionnaire was the tool used to collect public opinion data for this project. So that I might not reinvent the research wheel, I searched out questions previously used in other broad-based social science research such as the General Social Survey (GSS), Pew Research Centers (Pew), and Solar Energy Industries Association (SEIA). In addition to common demographics questions, survey questions were selected to examine respondents' opinions about the following:

- General environmental issues
- Climate change
- Economics (both national and household) as it relates to the environment
- Government environmental policy
- The use of genetically modified organisms (GMO) in agriculture
- Population growth
- Individual environmental behaviors
- Energy (solar, hydraulic fracturing [fracking] for natural gas, and the Keystone XL Pipeline)

For the sake of comparability, only minor changes (if any) were made to question wording. In nearly all of the cases, the changes were made only to account for the different survey format. Where the GSS, which is administered in person, might have asked a question included in this study as a follow-up to a respondents answer to a preceding question, I rephrased the prefatory statement to the question for clarity.

The survey questionnaire was built using Qualtrics Online Survey Software. I asked a total of 46 questions. To understand and compare the makeup of each of my survey groups, the surveys began with a series of demographics questions: Age, Household Income, State of Residence, Sex, Education, Political Preference, and Religious Preference.

General American Survey Procedure

I invited research subjects to participate in a general American survey (herein referred to as the General American Survey") using Amazon Mechanical Turk (AMT). AMT is a web-based crowdsource marketplace often used in recruiting research subjects for social science experiments. I created postings to the AMT community with an outside link to participate in the Qualtrics survey. Upon completion of the survey, the participants were asked to input a code on the AMT website to verify their completion. I personally compensated General American Survey respondents $0.60 through AMT for their time and participation in completing the online survey. Seeking to collect sufficient data to draw meaningful conclusions, I set a target goal of 500 General American Survey responses.

The online survey methodology employed in this project has some inherent limitations that are discussed in detail later on. While some effort is made to compare the General American Survey results to other national survey data, this is primarily to provide context and highlight weaknesses introduced by the methodological limitations. It is important to note, however, that for general purposes of this project, the General American Survey is considered representative of the U.S. population.

LDS Public Opinion Survey Procedure

Since my objective was to gather sufficient LDS response data to make a reliable comparison with my General American Survey group, I needed a way to target the survey to potential Mormon respondents, while still remaining independent and ensuring that the results were random. I contracted directly with the Qualtrics Panel Department to randomly administer the LDS-version of the survey (herein referred to as the "LDS Survey") directly to pre-screened Mormon participants. Qualtrics worked with its panel partner, Research Now, to target the survey at panelists who had previously prepared an online profile with answers to a wide range of screening questions. Research Now randomly invited small batches of subjects who had self-identified as Mormon to participate in the LDS Survey. Participants were not informed of which answer to a screening question, if any, resulted in their being selected to participate.

With the exception of their earlier responses indicating that they lived in the U.S. and were Mormon, the pool of prospective participants invited to participate in this survey was randomly generated. Survey participants were asked again as part of this survey to indicate their religious preference, serving as a secondary confirmation screening tool. If a respondent invited to participate in the survey through the Qualtrics Panel method did not affirmatively answer the question about religious preference as "Latter Day Saint (Mormon)" the survey was stopped. Working in conjunction with its partner organization, Qualtrics awarded these participants a small incentive for their time and panel participation.

Analytical Method

The first step in analyzing the data consisted of reviewing the raw survey results and screening them to remove responses of dubious or poor quality. After cleaning the data sets for the two

survey groups, the results for individual questions were examined using statistical methods. I used two basic types of analysis to determine whether observed differences between the two study groups were statistically significant (with a 95% confidence interval) or due to sample size error or random chance.

T-test

The first type of statistical comparison was a T-test for means. This method is designed to compare the mean averages of two independent groups. For some of the survey questions, I asked participants to select a response from a spectrum, or range, of answers. For example, one might select from the following choices: Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree. By assigning a number value to each result, one through five, a mean average for the responses of an entire data set was calculated. The T-test, which also accounts for the standard deviation and variance, is useful in evaluating whether or not the difference between mean average responses of the two groups is statistically significant.

The formula for comparing two independent means using the T-test is:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\left(\frac{(N_1 - 1)s_1^2 + (N_2 - 1)s_2^2}{N_1 + N_2 - 2}\right)\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}}$$

Z-test

The second type of statistical comparison I employed was the Z-test for two population proportions. This method is useful to compare the proportions of two independent sample groups with respect to a specific hypothesis. For example, I might ask whether the data indicate if one group is more likely to favor or oppose stricter regulations on power plants to combat

climate change. As with the T-test, the Z-test allows a researcher to evaluate whether the difference between the two groups is random or whether it is statistically significant.

The formula for comparing two random, independent sample proportions with respect to a single characteristic is:

$$H_0 = \frac{(\bar{p}_1 - \bar{p}_2) - 0}{\sqrt{\bar{p}(1-\bar{p})\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

OBSERVATIONS & RESULTS

The General American Survey distributed through AMT and the LDS Survey invitations from Qualtrics were live for a period of four days in early 2014.

General American Survey Data Collection and Validity

A total of 556 people responded to the General American Survey invitation administered through AMT over the course of four days. Prior to analyzing the results, I performed a simple quality control screening of responses using a few different criteria. First, there were three survey participants from the general survey administered through AMT who indicated that their religious preference was LDS. The results from these surveys were separated out and incorporated into the LDS data set.

At the request of the Duke University Institutional Review Board (IRB), I included as an answer option to the question about religious preference, "I Prefer Not to Answer." Without having an answer of any kind to this question, I could not usefully compare the results of the 39 survey

participants who selected this option to other groups, so they were also removed from the data set.

The last two quality screening tools were selected to eliminate unreliable and/or incomplete data. I removed 32 additional sets of AMT responses either because the total survey duration was less than 240 seconds (4 minutes) or because the participant skipped questions. In order for AMT respondents to obtain the code to be compensated for their time and participation they had to make it to the last page of the survey. As a demonstration of the voluntary nature of participation in the survey, skipping any of the questions was an option for all survey participants. To avoid accidental skipping of questions, I programmed the Qualtrics software to ask the participants if they were sure they wanted to continue without answering questions before proceeding to the next page. In most cases, a short survey response time was associated with skipping questions. I considered these surveys unreliable since they might have represented individuals who were simply trying to get to the last page of the survey for the compensation code. Furthermore, dealing with incomplete survey data would have made comparing and analyzing responses to individual questions unnecessarily difficult. The General American Survey data set consisted of responses from 482 individuals.

LDS Survey Data Collection and Validity

I collected survey responses from 71 LDS respondents by way of the Qualtrics Panel Department. As previously noted, the survey responses from three LDS individuals who participated in the general survey administered through AMT were added to these 71, creating a total LDS survey sample of 74. All of the survey results from these individuals were considered acceptable for inclusion in the data analysis.

Demographic Results: Who Responded to the Surveys?

The demographics questions were designed to provide context for interpreting the data. Beyond simple answers to public opinion questions, they paint a picture of who responded to the surveys. This information is essential to make comparisons between the results of my two surveys and assess differences with the results of other surveys. The demographics information can be used to draw conclusions about the implications of my findings.

Age and Sex

The data for both the General American Survey and the LDS Survey groups showed nearly even response rates of men and women. The AMT group was 49.06% female and 50.94% male, while the LDS group was 51.35% female and 48.65% male. According to these results the sex ratios of my survey groups are unlikely to explain differences in their survey responses.

No attempt was made to interview individuals under 18 years of age. I was interested in the opinion of the 76.5% of the U.S. population ages 18 and over (U.S. Census Bureau 2012 American Community Survey 1-Year Estimates). **Table 1** summarizes the age breakdowns of the U.S. population, the responses from the General American Survey, and the responses to the LDS Survey.

Table 1: U.S. Population and Survey Participants by Age

	2012 U.S. Census Bureau Age Breakdown (% of Population 18 and Over)	General American Survey Age Breakdown (% of Respondents)	LDS Survey Age Breakdown (% of Respondents)
18 to 24 years	13.07%	21.78%	20.27%

	2012 U.S. Census Bureau Age Breakdown (% of Population 18 and Over)	General American Survey Age Breakdown (% of Respondents)	LDS Survey Age Breakdown (% of Respondents)
25 to 34 years	17.52%	38.80%	20.27%
35 to 44 years	16.99%	15.98%	18.92%
45 to 54 years	18.43%	10.79%	12.16%
55 to 64 years	16.08%	9.75%	18.92%
65 years and over	17.91%	2.90%	9.46%

Specific age data corresponding with the selected age ranges for the LDS population was not available for comparison. In 2009, however, Pew reported that the American LDS population was somewhat younger than the general public (Pew 2009a).

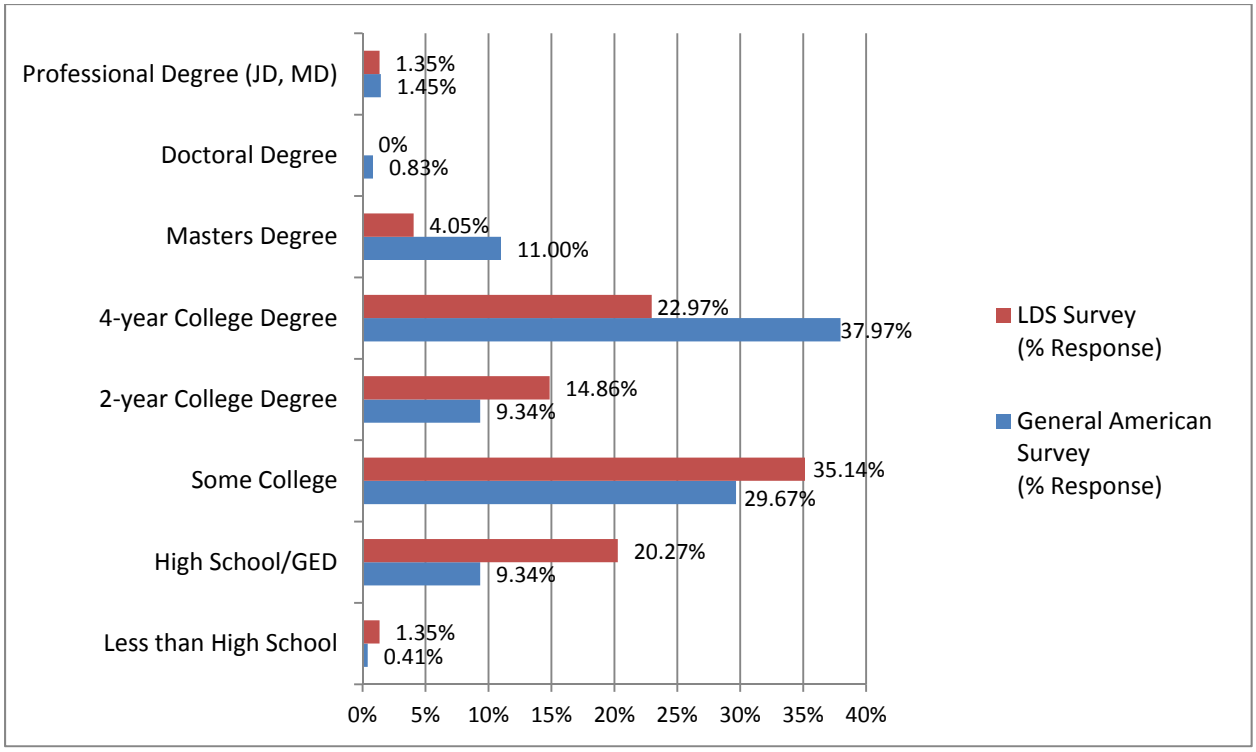
As shown in **Table 1**, the respondents to both the General American Survey and the LDS Survey skewed younger than the general American public. Other researchers have reported this effect both in online research generally and in using AMT specifically (Gideon 2012, Berinsky et al. 2010). A T-test comparison of the mean age group responses shows that the average General American Survey participant was younger than the average LDS Survey respondent by a significant margin ($p=0.0034$). Given this difference, differences in age must be considered a possible factor in any other observed differences between the two study groups.

Education and Income

Nearly all of the respondents in both survey groups reported having completed at least high school and a strong majority of respondents in both groups indicated that they had at least some college education.

Figure 1 shows the breakdown for the two survey groups by education.

Figure 1: Survey Participants by Education

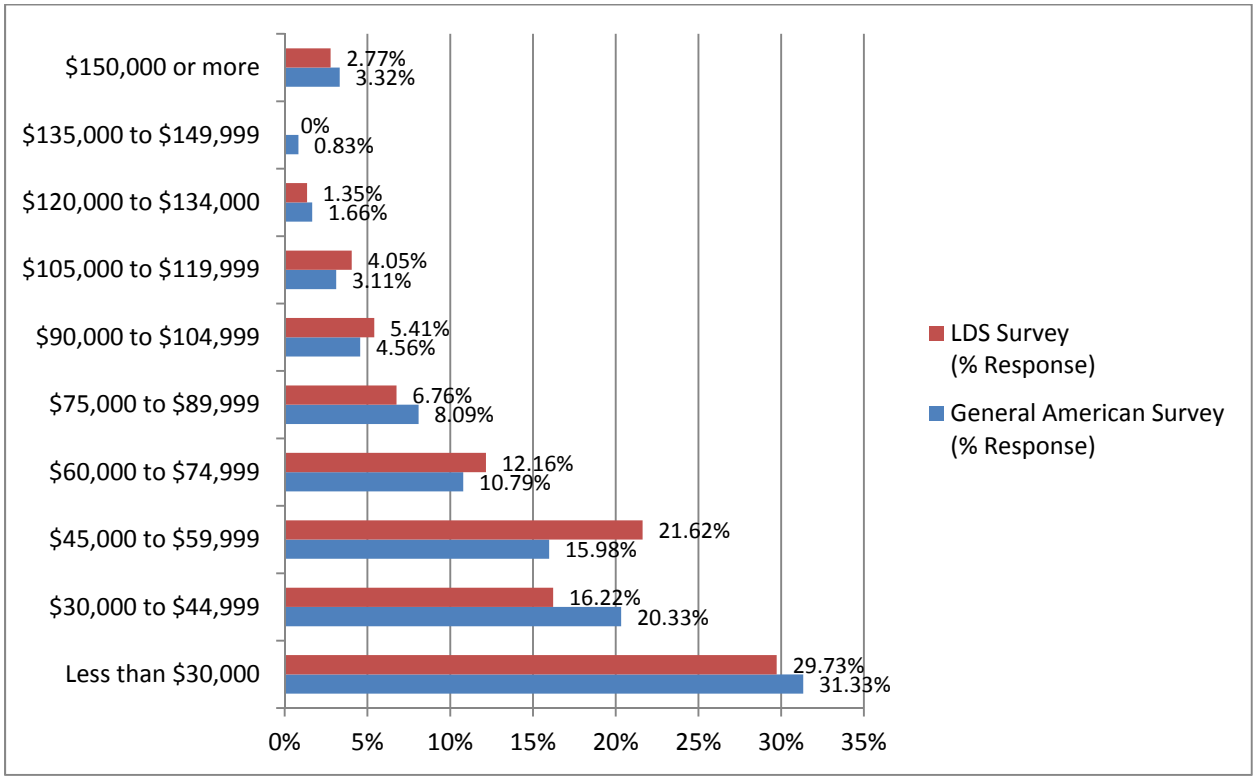


The average individual taking the General American Survey reported having completed more education than the average LDS Survey participant (p=0.0002). This implies that education may also explain observed differences between the two survey groups.

Previous research has found that online survey results sometimes attract participants with higher income levels than other research methods (Gideon 2012). Both survey groups had a

mean average combined annual household income in the $45,000 to $59,999 range. **Figure 2** shows the breakdown of the two groups by household income.

Figure 2: Survey Participants by Combined Household Income



Not only is the household income difference for the two groups not different, they were essentially statistically comparable (p=0.9704).

State of Residence

The General American Survey had respondents from 44 states, with California having the largest percentage of the respondents (11.46%). The LDS survey had respondents from 11 states, with Utah (48.65%) and Idaho (13.51%) having the largest representation.

Religious Preference

All of the responses included in the LDS Survey data set self-identified with the religious preference Latter-Day Saint (Mormon). **Table 2** summarizes the religious preference indicated by the General American Survey, and, for comparison, the results of the 2012 GSS for the same question (GSS 2012b). The GSS survey did not include LDS or Mormon as a response option.

Table 2: 2012 General Social Survey and General American Survey Participants by Religious Preference

	2012 GSS Results (% of Respondents, n=4,478)	General American Survey (% of Respondents, n=482)
Protestant	49.0%	18.46%
Catholic	21.8%	14.11%
Jewish	1.8%	2.70%
Buddhism	0.5%	2.28%
None	19.2%	43.36%
Hinduism	0.3%	0.41%
Muslim/Islam	0.5%	0.83%
Other Eastern	0.2%	0.21%
Orthodox Christian	0.4%	0.62%
Christian	4.8%	15.15%
Native American	0.1%	0.21%
Inter-Nondenominational	0.1%	1.66%

*Those who responded to the GSS survey with "Other (Please Specify), Don't Know, or No Answer" were excluded from this analysis. As discussed above, those who preferred not to answer this question were also excluded from analysis for the General American Survey.

As **Table 2** indicates, there are some large differences between the GSS and General American Survey religious preference data. The most obvious difference is in the percentage of respondents reporting no religion. The General American Survey participants expressed no

religious preference more than twice as often as those individuals interviewed as part of the 2012 GSS study. In turn, there were significantly lower percentages of self-identified Protestants and Catholics, although these may partially be skewed by the much higher percentage of AMT respondents self-identifying generally as Christian rather than selecting a specific Christian denomination.

The religious preference differences between the General American Survey participants and the 2012 GSS results are attributable to the online data collection method. Still, the result is noteworthy because, as was observed with age, it implies that the General American Survey is not religiously representative of the U.S. population as a whole. Given this finding, it is important to reiterate that this research very specifically compares the results of two online surveys, the General American Survey and the LDS Survey. It does not purport to be a perfect comparison of the full LDS community and the whole U.S. population.

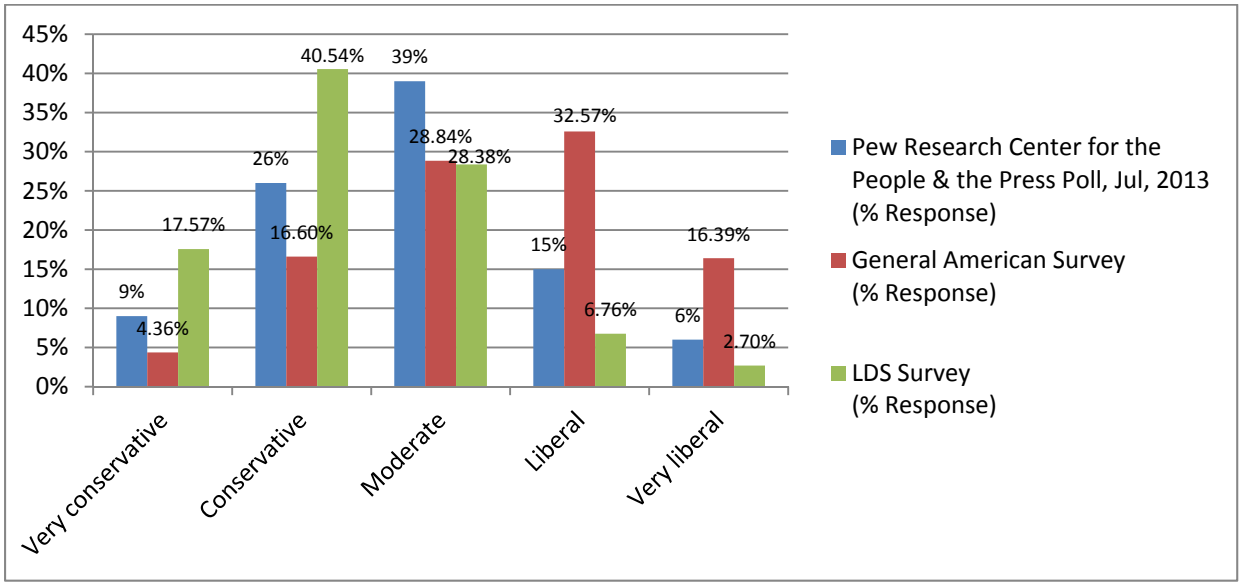
Political Views

Since I considered political differences between Mormons and the average American to be significant, including as an indicator of opinions about the environment, it was important to gauge the political views of the two survey groups. To do this, I asked the following question (Pew 2013):

> **"In general, would you describe your political views as very conservative, conservative, moderate, liberal, or very liberal?"**

Figure 3 summarizes the political view data for the General American Survey and LDS Survey groups. For comparison, it also includes data from a July 2013 Pew public opinion survey of 1,480 Americans interviewed by telephone (Pew 2013a).

Figure 3: U.S. Population and Survey Participants by Political Views



In order to isolate the cause of a belief, one would need to control for other differences. As noted above, political persuasion is a perfect example of a difference other than religious preference observed between the LDS Survey respondents, those who responded to the General American Survey, or more broadly speaking, the American public. Due to methodological limitations, particularly with respect to the number of liberal LDS responses, controlling for political preference is outside the scope of this project. The General American Survey data clearly represents a group that is much more liberal than Americans as a whole. This is likely a result of the online recruitment through AMT. Although significant differences between the LDS community and a representative sample of Americans would be expected, data collection methods are likely to contribute to an exaggerated difference.

It is well known that Mormons as a group are politically much more conservative than the nation as a whole. This phenomenon is born out in my research data. A T-test on the means for the two groups demonstrated that the LDS Survey participants were significantly more conservative than the non-Mormon general survey participants ($p<0.0001$). Digging deeper into the data, I ran calculations comparing the political views of the LDS sample just to those individuals who selected any of the other religions in the General American Survey (which is to say, excluding those who indicated no religious preference). The LDS sample was still significantly more conservative than all other religious groups combined ($p<0.0001$). Similarly, those individuals who indicated a religious preference other than Mormon in the General American Survey were significantly less liberal than those who selected "None" ($p<0.0001$).

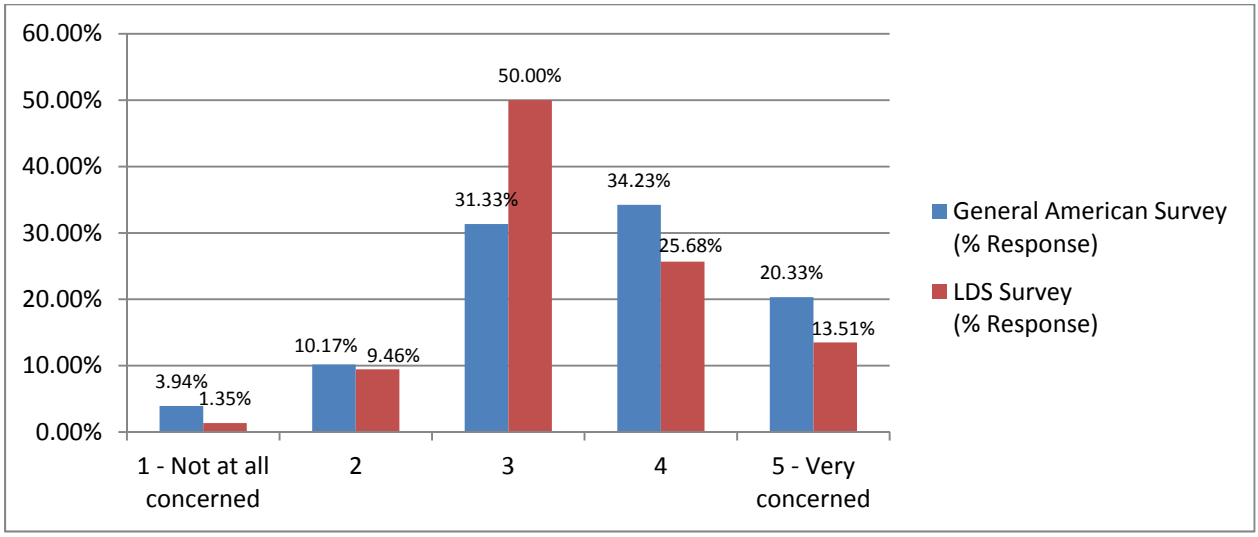
General Environmental Issues Opinion Results

Following the general demographics, religion, and political view questions, I asked survey participants to respond to questions about the environment, beginning with this one (GSS 2012a, Code GRNCON):

> **"Generally speaking, how concerned are you about environmental issues? Please tell me what you think, where 1 means you are not at all concerned and 5 means you are very concerned."**

Figure 4 summarizes the responses to this question:

Figure 4: General Concern about Environmental Issues



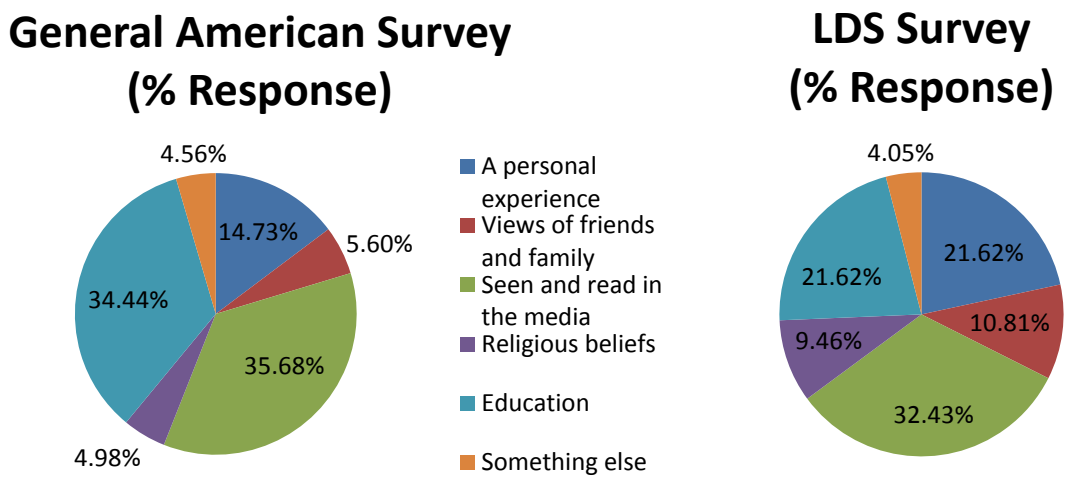
The data do not show a significant difference between the two survey groups using the T-test comparing the means. A Z-test comparing the likelihood of the two groups to express a greater than neutral concern about environmental issues (answers 4 or 5), however, did show a statistically significant difference (p=0.0132). The General American Survey sample was more likely than the LDS Survey sample to express a greater than neutral level of concern about environmental issues.

There are many factors that might shape an individual's general views about the environment. Among these are personal experiences, the views of family and friends, interactions with the media, religious beliefs, and education. To examine more deeply the motivations underlying survey participants' general environmental views, each was also asked the following (Pew 2010a):

> **"Which one of the following has had the biggest influence on your thinking" about the environment?**

Figure 5 breaks down the responses from the two survey groups.

Figure 5: Biggest Influence on Thinking about the Environment



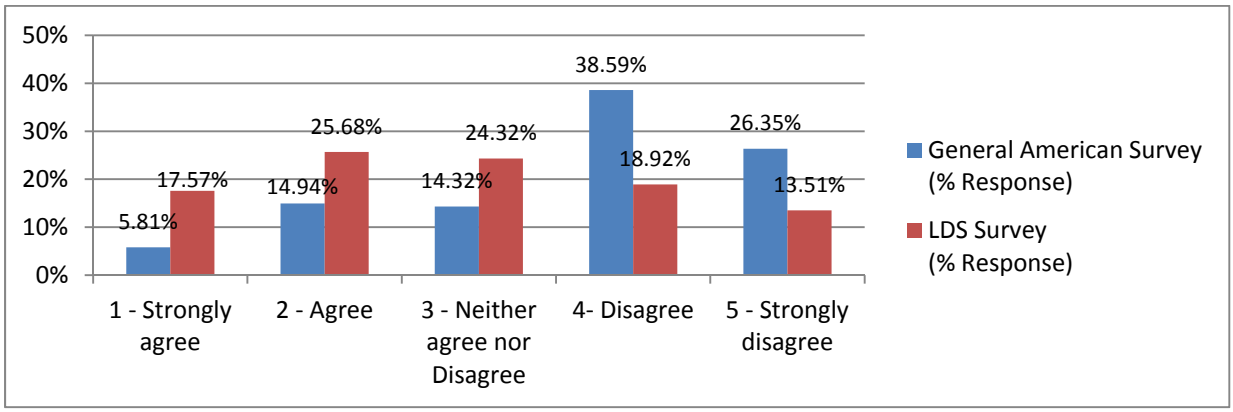
Education and media information were the largest influences. In both groups, religion was the least cited specific influence on participants' environmental views. Despite the fact that what appears to be twice the percentage of individuals in the LDS survey citing religious beliefs as the biggest influence on their thinking about the environment, a Z-test comparing the proportions of the two groups who cited religion as the biggest influence, the difference was not statistically significant (p=0.11876). Religion is not widely considered the major influence on environmental views in America.

Another way to measure an individual's thoughts about the environment is to inquire about his or her views of threats to it. To examine this, I asked survey participants the following (GSS 2012a, Code GRNEXAGG):

> **"How much do you agree or disagree with following statement? Many of the claims about environmental threats are exaggerated."**

Figure 6 depicts the responses from the two survey groups. A comparison of the mean response for the two groups of data using a T-test reveals that Mormons are significantly more likely to agree that claims about the environment are exaggerated than the General American Survey group as a whole.

Figure 6: Claims about the Environment Are Exaggerated



Climate Change Opinion Results

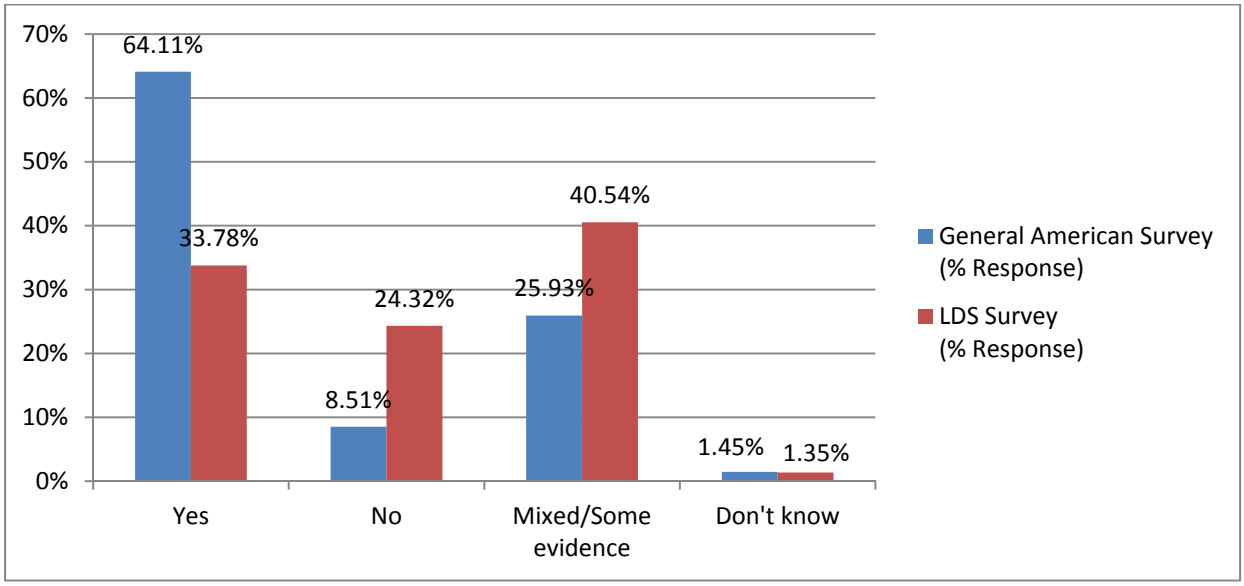
Climate change is the signature environmental issue of the moment. The American public is frequently polled about the topic. This is an interesting subject to study because there is objective, scientific evidence about it. Although there may be differences of opinion about its significance, scientists almost uniformly agree that global temperatures are rising.

With respect to climate change, I asked survey participants the following question (Pew 2013b):

> **"From what you've read and heard, is there solid evidence that the average temperature on Earth has been getting warmer over the past few decades, or not?"**

Survey participants were given the options of responding Yes, No, Mixed/Some evidence, or Don't know. **Figure 7** shows how participants from the two groups responded.

Figure 7: Strength of Climate Change Evidence



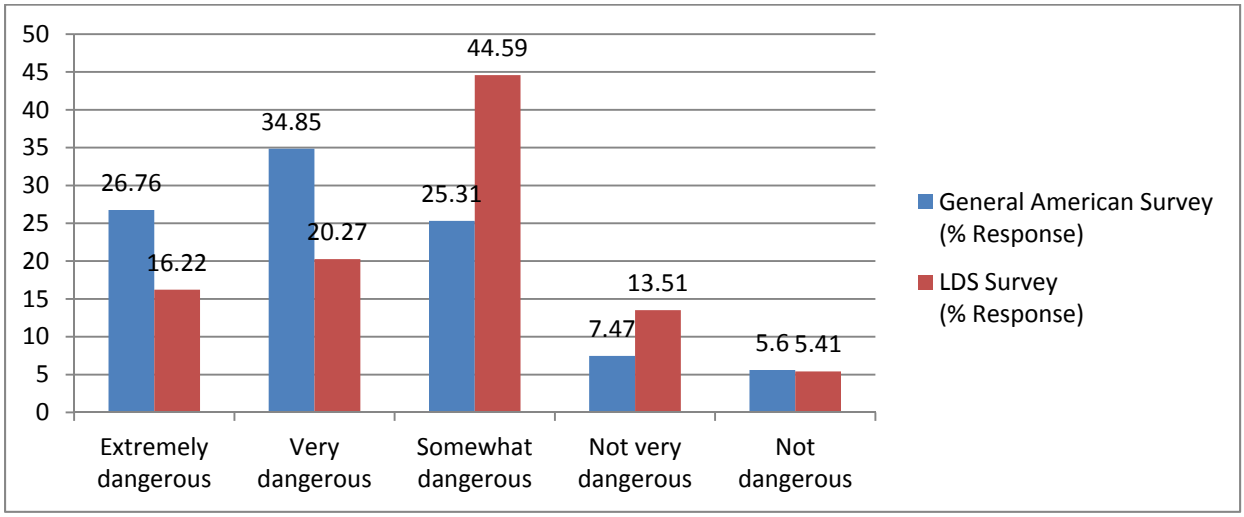
Mormons disagree with the General American Survey participants that there is solid evidence that temperatures on earth are getting warmer ($p<0.00001$). They were significantly more likely to report that the evidence either did not support the conclusion that temperatures were rising, or that the evidence was mixed.

While not surprising given their answers to the previous question, Mormons also differed from non-LDS General American Survey participants about the dangers climate change posed for the environment. **Figure 8** illustrates the responses to the following question (GSS 2012a, Code TEMPGEN1):

> **"In general, do you think that a rise in the world's temperature caused by climate change is:"**

a. **Extremely dangerous for the environment**
b. **Very dangerous**
c. **Somewhat dangerous**
d. **Not very dangerous, or**
e. **Not dangerous at all for the environment**

Figure 8: Climate Change Danger Results



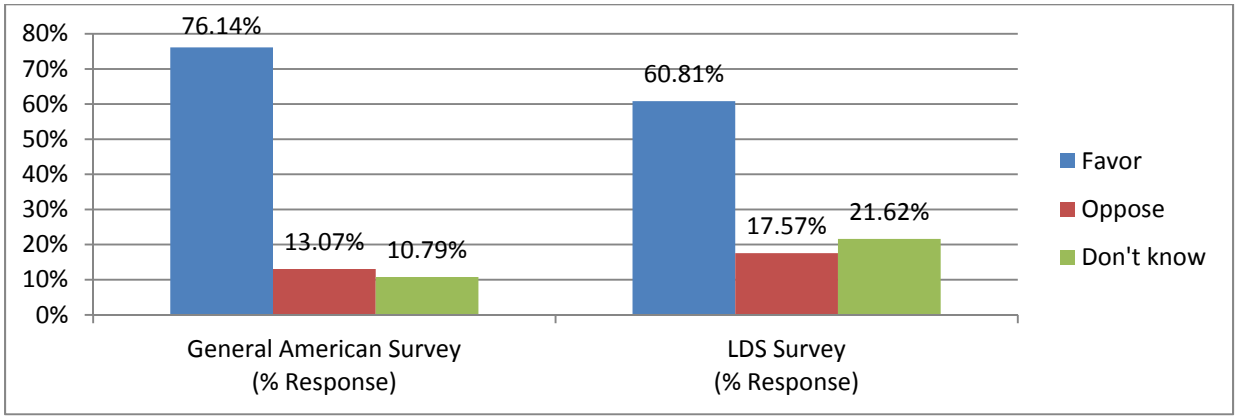
A T-test comparing the mean responses from the two survey groups revealed that, by a statistically significant margin, Mormons believe that climate change is less dangerous than non-Mormon General American Survey respondents do (p=0.0024).

The final climate-related survey question was about proposed actions to combat global warming. Participants were asked (Pew 2013c):

> **"Do you favor or oppose setting stricter emission limits on power plants in order to address climate change?"**

Figure 9 summarizes the LDS and General American Survey responses:

Figure 9: Stricter Power Plant Emission Limit Survey Results



Both groups expressed a majority opinion in support of responding to climate change through stricter power plant emissions. According to a Z-test comparing the proportions of the two groups who in favor of establishing such limits, however, the LDS Survey group was significantly less likely than the General American Survey group to do so ($p=0.00512$).

Economics Opinion Results

In many ways, today's environmental problems are the combined result of centuries of population and economic growth. For decades now, environmental researchers and writers have reported on the unsustainable nature of current economic policies focused resolutely on growth and advocating increased consumption (Schumacher 1975, Meadows et al. 2004). Environmental economists, while they do not disagree that economic activity is a source of environmental problems, typically attribute those problems to market inefficiencies (failure adequately incorporate the cost of externalities) (Keohane and Olmstead 2007). Indeed, many economists believe that economics may also be the most practical and efficient solution to environmental

problems. To consider the role of economics in society's environmental dialogue, I asked survey participants questions about both national and household spending.

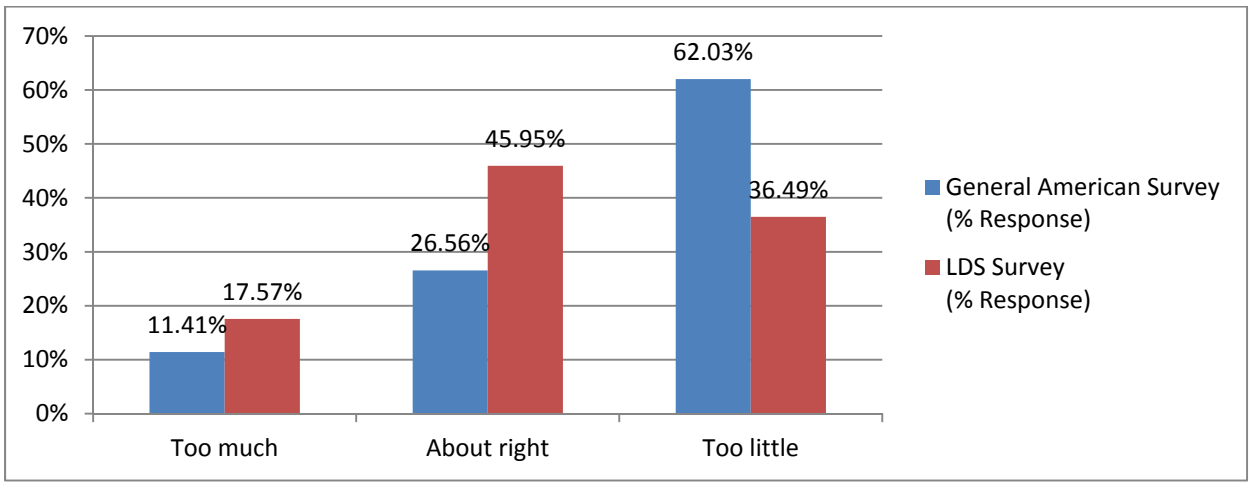
National Economics Questions

To gauge opinion about the U.S. economic engagement with responding to environmental problems, I asked survey participants the following question (GSS 2012a, Code: NATENVIY):

> **"We are faced with many problems in this country, none of which can be solved easily or inexpensively. With respect to the environment, please tell me whether you think we're spending too much money on it, too little money, or about the right amount."**

Figure 10 breaks down the responses:

Figure 10: National Spending on Solving Environmental Problems



A minority of both survey groups indicated that America was spending too much on the environment. The General American Survey group was significantly more likely to express a belief that the U.S. was spending too little money on the environment than the LDS group

(p<0.00001). In contrast, the LDS sample was significantly more likely to respond that national spending was about right (p<0.00001).

Household Economics Questions

An individual may have an opinion about the national level of investment to solve environmental issues, but he or she may not feel much control over it. I was also interested in the economic engagement with the environment at a household level. Following in Hunter's and Toney's 2005 research, I examined my two study groups' willingness to directly protect the environment by asking two different questions. First, I asked the following (GSS 2012a, Code: GRNTAXES):

> **"How willing would you be to pay much higher taxes in order to protect the environment?"**

Figure 11: Willingness to Protect Environment through Higher Taxes

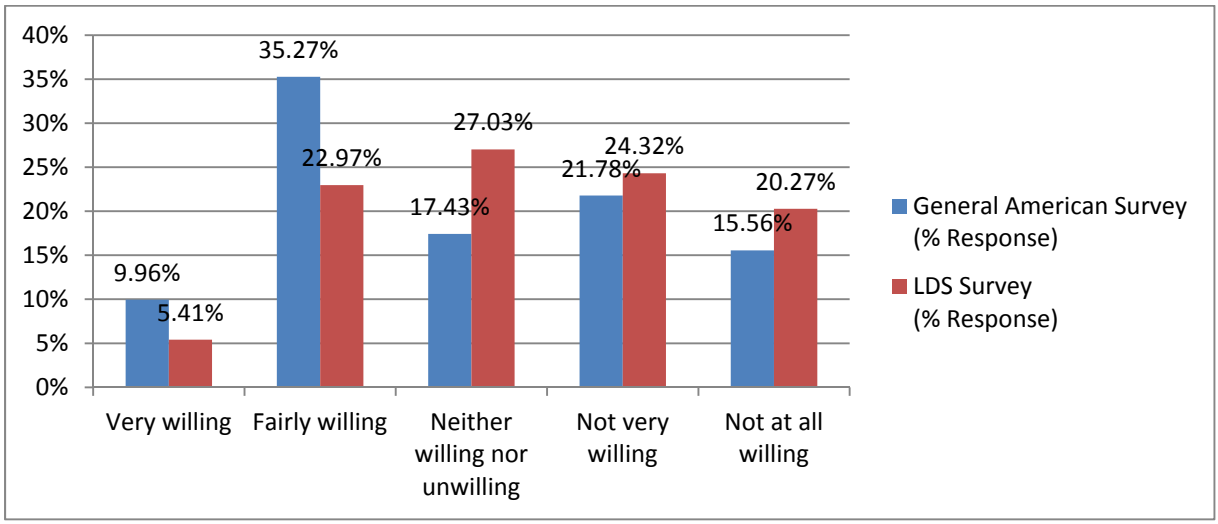


Figure 11 depicts the responses from the two survey groups. A comparison of the mean response for the two groups of data using a T-test reveals that Mormons are significantly less

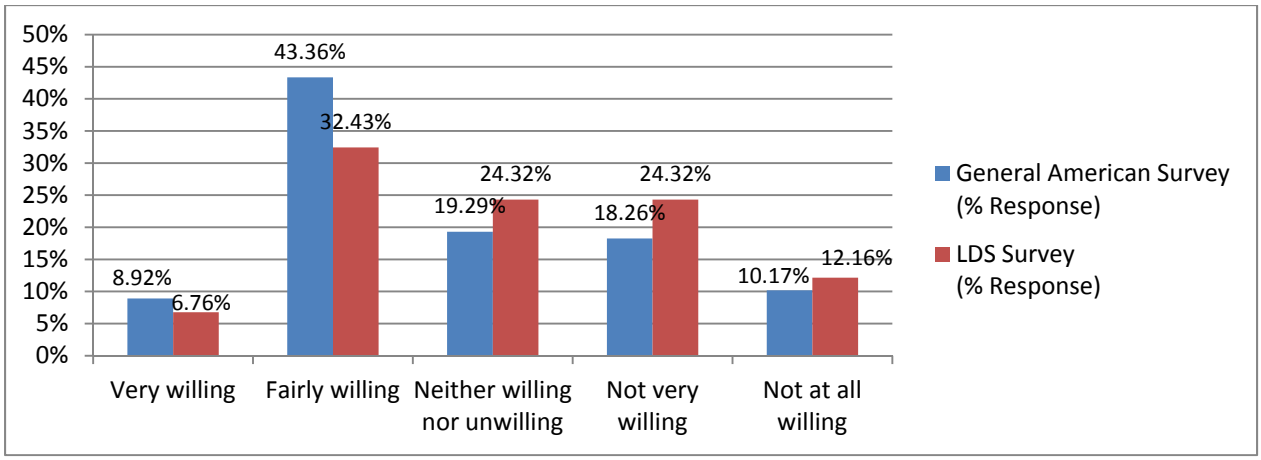
willing to pay higher taxes to protect the environment than the General American Survey group as a whole (p=0.03).

As a follow-up, individuals were asked the following related question (GSS 2012a, Code: GRNPRICE):

> **"How willing would you be to pay much higher prices in order to protect the environment?"**

Figure 12 shows the two survey groups' response rates:

Figure 12: Willingness to Protect Environment through Higher Prices



In contrast to the question framed around taxes, the statistical difference between the two groups' mean average willingness to protect the environment through higher prices was not significant (p=0.0758). Looking only at the likelihood that an individual selected "very willing" or "fairly willing" (an expression of some willingness to pay higher prices), however, was significantly different (p=0.03572). The General American Survey group was more willing to pay higher prices than the LDS group.

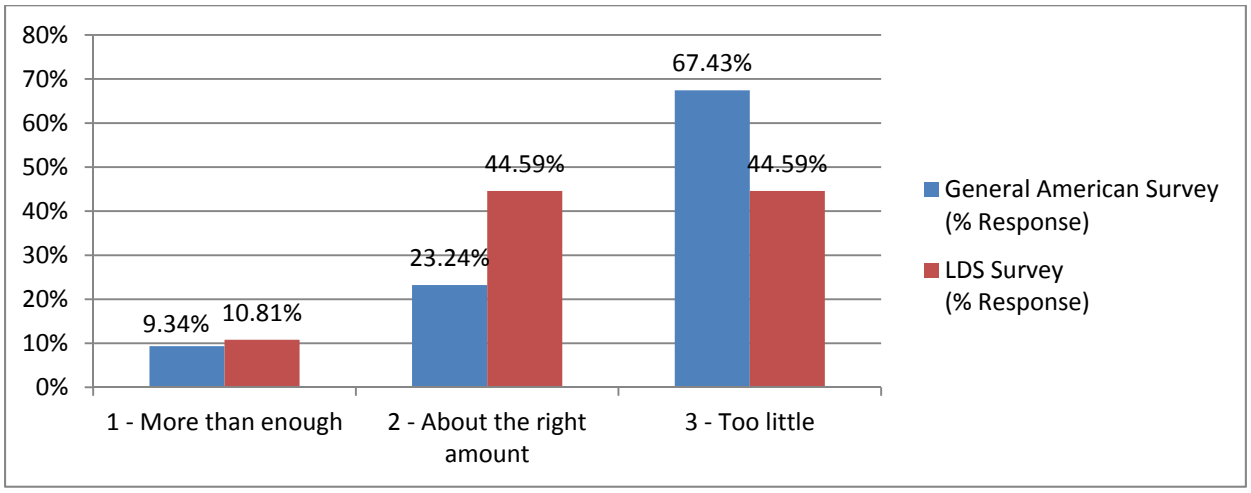
Government Environmental Policy Opinion Results

Environmental challenges generally exist on a scale outside the control of the individual. Although local efforts can be organized to respond to local environmental issues, many environmental problems require coordinated action at a national government level. To consider American's opinions about the national-level environmental policy, participants were asked to respond to two questions. First (GSS 2012a, Code: AMPROGRN):

> **"Some countries are doing more to protect the world environment than other countries are. In general do you think that the United States is doing:"**
>
> a. **More than enough**
> b. **About the right amount**
> c. **Too little**

Figure 13 summarizes the responses to this question.

Figure 13: American Environmental Engagement Compared to Other Countries



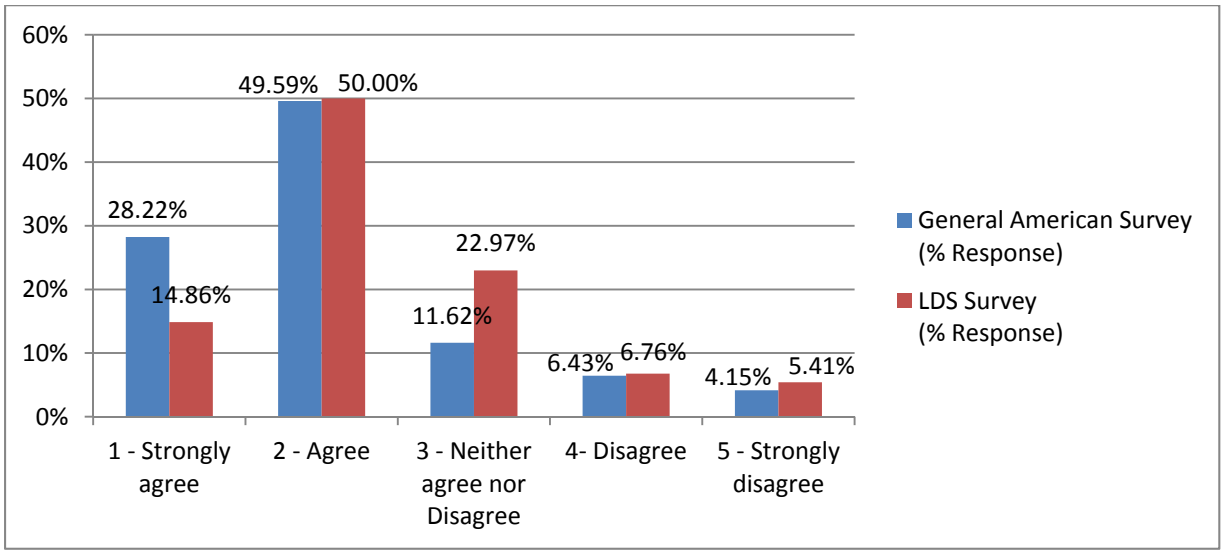
As might be expected, the results parallel the two groups' responses to the earlier question about national spending to solve environmental problems, with similar numbers expressing a belief that the U.S. is doing and spending too little. Mormons responded that the U.S. was doing

about the right amount as often as they expressed a belief that it was doing too little. The General American Survey group was significantly more likely to express a belief that the U.S. was doing too little to protect the world environment than the LDS group ($p<0.00001$).

Figure 14 summarizes the results for the second question about national environmental policy, wherein individuals were asked to indicate their level of agreement with the following statement (GSS 2012a, Code: GRNINTL):

> **"For environmental problems, there should be international agreements that the United States and other countries should be made to follow."**

Figure 14: Belief in International Environmental Agreements



A majority of both survey groups reported agreement that international environmental agreements should be a tool for solving environmental problems. A T-test analysis of the average response, however, shows that the General American Survey group more strongly supports this policy approach than the Mormon group ($p=0.023$).

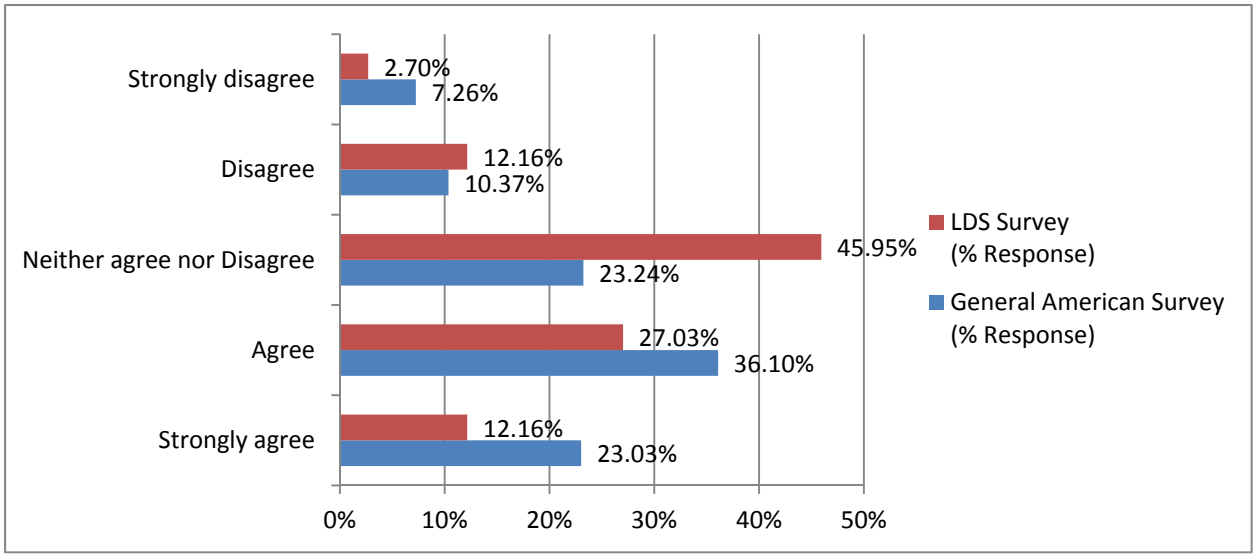
Population Growth Opinion Results

Population growth is another national and international issue closely tied to environmental impacts. To measure the opinions of my survey groups about population growth, I asked them to tell me how much they agreed or disagreed with the following statement (GSS 2012a, Code: POPGRWTH):

"The earth cannot continue to support population growth at its present rate."

Figure 15 shows the relative response rates for the two survey groups:

Figure 15: Population Growth Rate Sustainability



A majority of the General American Survey respondents agreed or strongly agreed with the statement. An applied T-test comparison of the mean response for the two groups shows a statistically significant difference. The LDS Survey group is significantly less likely to agree that the current population growth rate is unsustainable (p=0.0008).

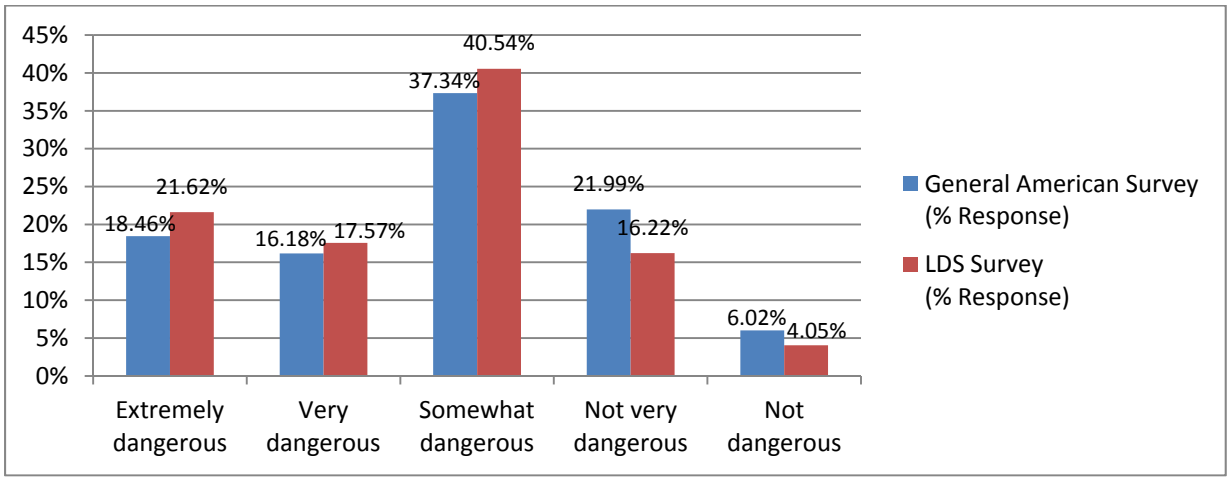
GMO Agriculture Opinion Results

One hot-button environmental issues that is clouded with conflicting information is the modification of genes in agricultural foods. It has the potential to improve crop yields and help feed a growing population without requiring additional farmland. But there are also known and unknown consequences to the environment. I asked the following question about GMOs (GSS 2012a, Code: GENEGEN):

> **"Do you think that modifying genes of certain crops is:"**
>
> a. **Extremely dangerous for the environment**
> b. **Very dangerous**
> c. **Somewhat dangerous**
> d. **Not very dangerous, or**
> e. **Not dangerous at all for the environment**

This question's survey results are tabulated in **Figure 16**:

Figure 16: Danger Level of Agricultural Crop Genetic Modification



Both groups expressed similar beliefs that modifying crop genes is somewhat to very dangerous for the environment (p=0.2284).

Individual Environmental Behaviors Results

In 2005, Hunter and Toney evaluated individual engagement with environmental protection. Drawing on a GSS question, I followed in their footsteps by asking survey participants the following question (GSS 2012a, Code: GRNGROUP):

> **"Are you a member of any group whose main goal is to preserve or protect the environment?"**

Figure 17: Direct Environmental Activism: Environmental Group Membership

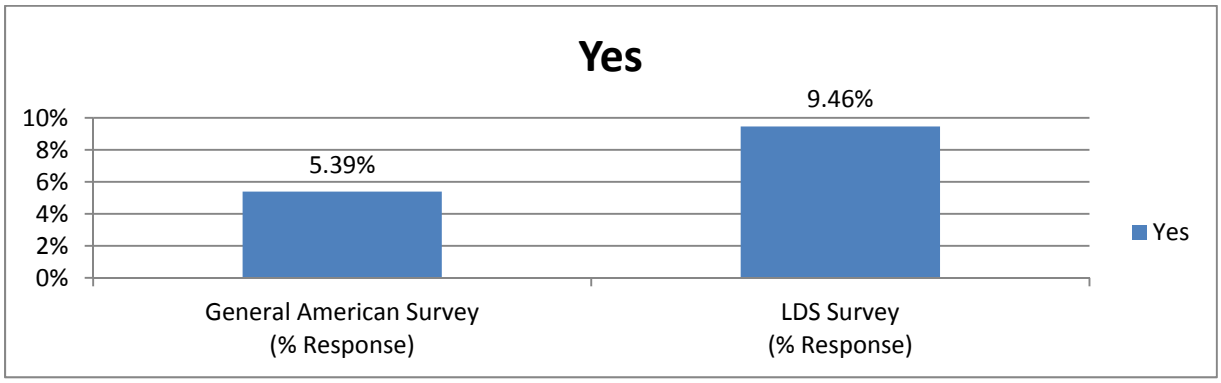


Figure 17 summarizes the results for the two study groups. As the chart above shows, fewer than 10% of both groups indicated that they were a member of an environmental group. Hunter and Toney found that 10.3% of the U.S. 1995 GSS group and 4.1% of the LDS Cache County, Utah group were members of an environmental group. They concluded that LDS survey participants were significantly less likely to engage with an organization focused on environmental protection (p=0.00318). My research showed that LDS Survey respondents expressed a higher rate of membership in these organizations, but that the difference was not statistically significant (p=0.16758).

Energy Opinion Results

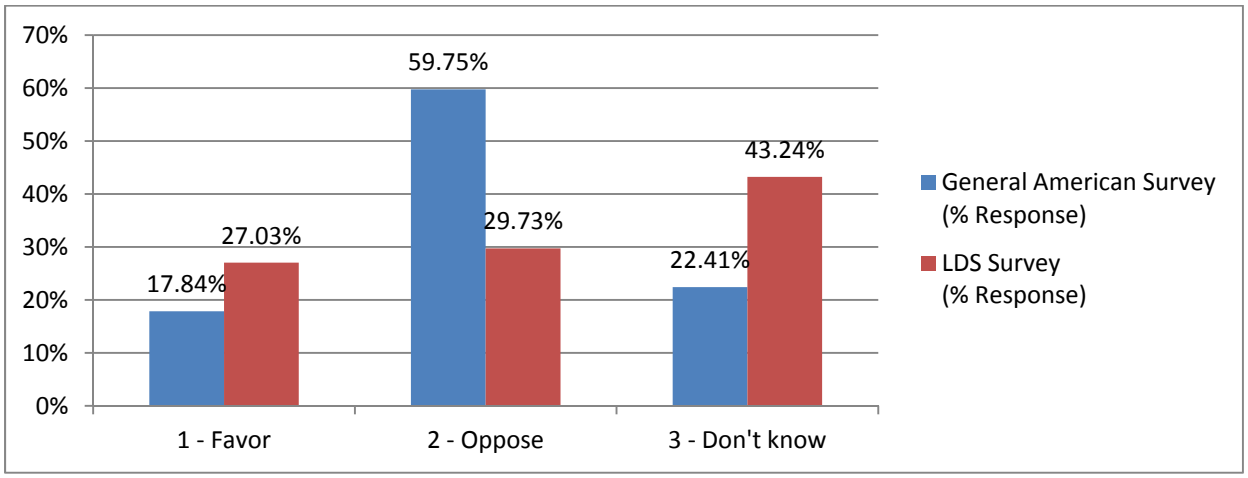
The final opinion subject area this research investigated focused on three issues of contemporary U.S. energy. Climate change, and more specifically atmospheric carbon dioxide concentrations, is increasingly central to the national debate about the environment. As this debate grows, so does the importance of public opinion about existing and new energy projects. To consider the views of the public on the issues of natural gas, unconventional oil sands, and solar power, I asked three questions.

The first energy question was (Pew 2013d):

> **"Do you favor or oppose increased use of fracking, a drilling method that uses high-pressure water and chemicals to extract oil and natural gas from underground rock formations."**

As shown in **Figure 18**, the survey groups were presented with the options to favor and oppose fracking, as well as to indicate that they did not know.

Figure 18: Do You Favor or Oppose Increased Use of Fracking



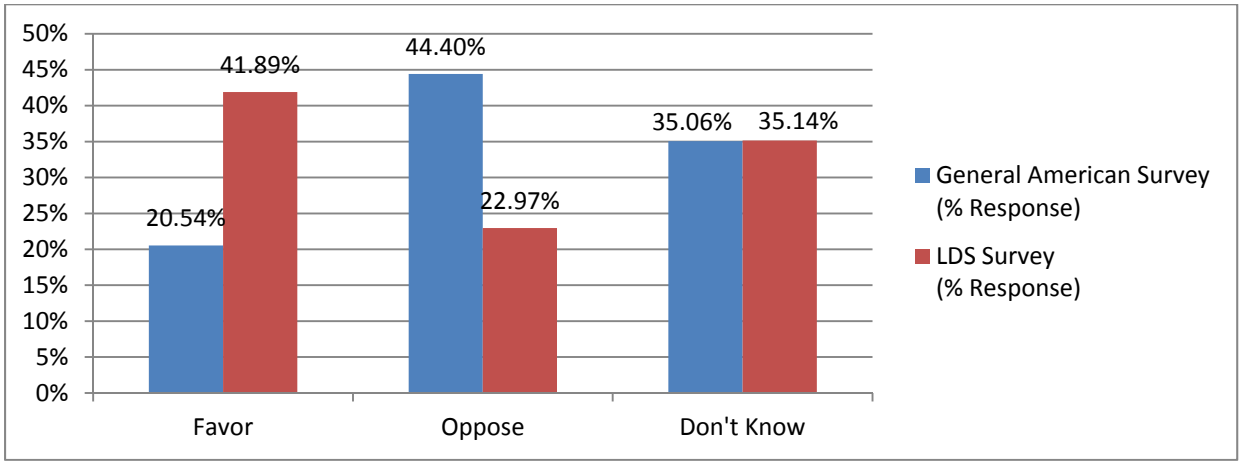
The LDS respondents indicated that they did not know almost twice as often as the General American Survey sample (43.24% to 22.41%). Of the participants who did express an opinion for or against, the General American Survey group was significantly more likely to oppose fracking than the LDS group ($p<0.00001$).

The second energy question was (Pew 2013e):

> **"Do you favor or oppose building the Keystone XL pipeline that would transport oil from Canada's oil sands region through the Midwest to refineries in Texas?"**

The Keystone XL pipeline issue has been playing out on the national stage for years because environmental groups have coordinated their opposition to it and business interests have largely supported it. The debate has been very political and very public because the issue will ultimately be decided by the U.S. State Department and President Obama. Unlike other environmental-energy controversies, including other pipeline projects, this one has a higher profile because it crosses an international boundary. Public opinion polling has consistently shown that the American public is supportive of constructing the Keystone XL pipeline (Mendes 2012, Pew 2013e). **Figure 19** illustrates the cumulative response data for the two groups I surveyed:

Figure 19: Do You Favor or Oppose Building the Keystone XL Pipeline



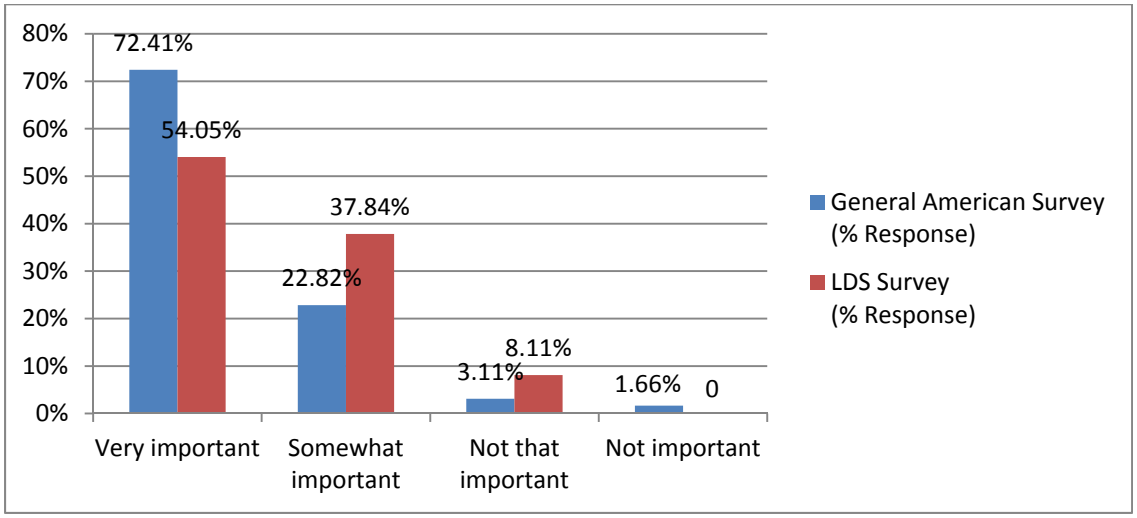
More than a third of both groups reported that they did not know whether or not they supported the construction of the pipeline. Of the participants in both groups that directly answered the question, the Mormon group reported support twice as often as the General American Survey group. The General American Survey audience was significantly more likely to oppose the construction ($p<0.0005$) than the LDS respondents.

The final energy-related survey question considered the groups' views about a form of renewable energy, solar power. The participants were asked the following question (Hart 2012):

> **"How important do you think it is for the United States to develop and use solar power?"**

Figure 20 tallies the survey results for this question:

Figure 20: Importance of Developing Solar Power in the U.S.



Both groups were strongly supportive of solar energy, with majorities indicating it is very important for the U.S. to pursue its development. A T-test analysis of the mean average responses from the two groups revealed no statistical difference ($p>0.99999$). A Z-test comparing the proportions of the two groups who responded that solar investment was "Very important," however, did reveal a relevant difference. The General American Although both groups were supporting of solar power, the General American Survey group was significantly more likely to express the belief it is "very" important than the LDS group.

DISCUSSION

Findings

This study examining public opinion collected through online surveys reveals significant differences between a sample of U.S. Mormons and a sample of non-Mormon Americans.. The research is not sufficient to conclude that religious differences are the cause of the differences. Furthermore, due to variables introduced through the online collection methods (including age,

education level, political ideology, and perhaps income levels), the observed differences are likely more dramatic than would be observed if the LDS views were compared to a more representative sample of Americans. A comparison of the General American Survey group and the LDS Survey group revealed the following:

General Environmental Issues

The LDS respondents in the survey were generally less concerned about environmental issues than the non-Mormon individuals surveyed, and neither group describes religious beliefs a major influence on their thinking about the subject. Mormons were more likely than non-Mormon survey participants to think claims about the environment are exaggerated.

Climate Change

Mormons do not have confidence in the scientific data showing that global temperatures are increasing. They are more likely than a general online survey group of Americans to believe the evidence is not indicative of climate change or that the evidence is mixed. In keeping with these views, the LDS sample also believes climate change effects are less dangerous than do the general American sample. Despite these views, respondents in both samples generally support stricter emission controls on power plants to combat climate change. Although the proportion of Mormons who favor these limits is significantly lower than was observed in the non-Mormon sample studied.

Economics and Government Policy

Nationally, Mormons believe spending to solve environmental problems is at the level it should be. Compared to the General American Survey group, the average LDS individual does not think spending should be increased or that U.S. policies should be changed to do more to protect the

world environment. Individually, the research shows that Mormons are relatively unsupportive of environmental protection if it means higher taxes or higher prices.

Population Growth

The LDS sample is significantly less likely than the group of non-Mormon Americans studied to agree that current population growth rates are unsustainable.

GMO Agriculture

There is no major difference between the LDS sample and the rest of the Americans sampled regarding the use of GMO in agricultural crops. Both groups expressed similar beliefs that modifying crop genes is somewhat to very dangerous for the environment.

Individual Environmental Behaviors

Contrary to what was observed by Hunter and Toney in the Cache County, Utah LDS population they studied in 2005, this study did not show lower LDS participation in direct environmental activism than the group I used to represent the U.S. population. Both groups engage with environmental organizations at low rates. As noted above, the difference between what was observed by Hunter and Toney and what this study revealed could be due to random sampling error or uncontrolled demographic differences.

Energy

Finally, Mormons in my sample are more supportive of fossil fuels and less supportive of solar energy than the general sample of Americans. They are significantly more likely to favor the use of fracking in natural gas exploration and the construction of the cross-border Keystone XL pipeline to transport bituminous oil from Canada to be refined in the U.S. While LDS

respondents are typically supportive of solar power, their expressions of support are not as robust as was seen from the other group.

Contemporary environmental problems are myriad and frequently very complex. Environmental writers from Aldo Leopold to Bill McKibben acknowledge that responding to complicated environmental predicaments will require a broad organizational response. Individuals and groups intent on solving the problems are recruiting others to their cause, and they frequently use morality and ethics as motivational recruitment tools. There is something very evangelical about this. By evangelical I refer not to one denomination in particular, but rather to "evangelism", the preaching and the imparting of information and wisdom in an effort to win converts.

At its most basic level, social science research uncovers previously unknown information about the groups it is designed to study. It provides a snapshot image of the research subjects. In the environmental context, research may reveal what a group believes and perhaps to a limited extent why its members believe it. This project was designed to determine what the LDS community thinks about contemporary environmental issues and probe the underlying motivations for the group's opinions. Previous research about the environmental views and behaviors of America's Mormons was rare and limited in scope. The goal of this research was to shed light on this small American religion's environmental views and examine them with a new level of detail. Understanding what Mormons believe about the environment may be important to engaging with them on important environmental issues and in partnering with them on future efforts to solve environmental problems.

Limitations of the Study

To perform high quality social science research one needs the resources to collect high quality data. Given the constraints of doing this research on a limited personal budget and the need to ensure unbiased data collection, I encountered several limitations. I collected data using online survey methods. While this helped protect against researcher bias in selecting participants, it inherently selects for younger, more technologically savvy, and sometimes wealthier individuals. This research did not seek to control for demographic variables introduced through the data collection methods, such as political views, age, income, or education. For example, I assumed for the purposes of this investigation that the responses to the General American Survey conducted through AMT were representative of the U.S. as a whole. The limitations introduced by my methods of collecting this data, however, indicate that the group recruited using AMT are not representative of all Americans. They differed significantly in terms of age, education, income, political preference, and most importantly religious preference.

As the demographics data I collected shows, both of my research groups skewed younger than the U.S. population. Perhaps because individuals voluntarily participating in online surveys are younger, the respondents to my General American Survey were more educated, more politically liberal, and more likely not to be religious than would have been the case if I could have collected data through more rigorous and accurate methods. In each case, these differences represent possible factors to explain observed differences between my two study groups.

The question of political views was a particularly significant limitation. Using multivariate methods, I could have controlled for political views to more fully examine the nature of

differences I observed in the LDS sample. My main goal, however, was not to explain the differences between LDS members and other Americans, but rather to describe these differences. Future work will have to try to disentangle religious, political, and other sources of difference. Despite its limitations, this research represents the best effort to survey national LDS public opinion on a broad range of environmental issues to date.

Further Research

There is still a great deal of research to be done into the role religion plays in forming social opinions about the environment and what role religious institutions might play in responding to environmental problems. Given their traditional focus on morals, ethics, and the public good, these groups could bring authority and pre-existing organization to the environmental movement. This research provides some of the foundational information about what the LDS community thinks about the environment. Additional research is warranted on the motivations behind these opinions and the interplay between political ideology and religion in shaping them.

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